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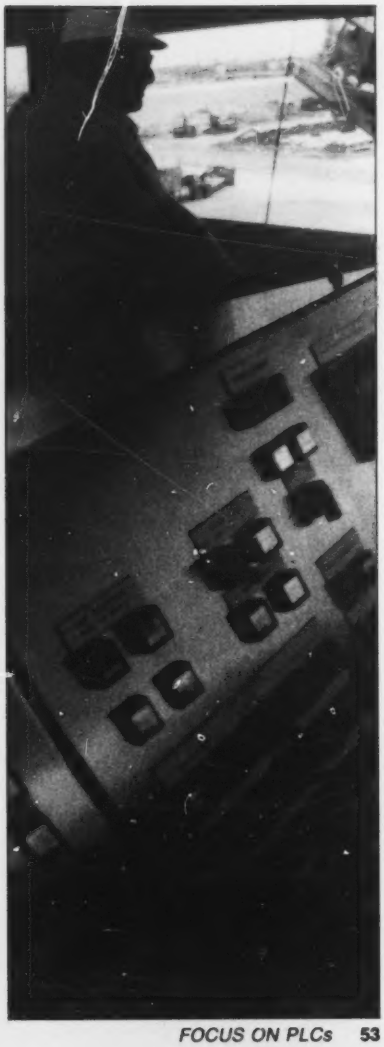

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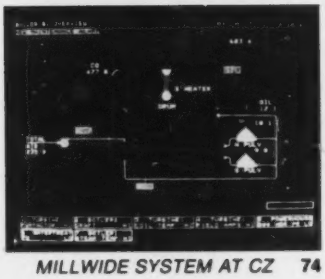

MILLWIDE SYSTEM AT CZ 74

COVER: *This issue examines one of the latest developments in process automation—the new-line PLC—and takes a look at some recent millwide and dedicated control installations. (Photo courtesy of Honeywell).*

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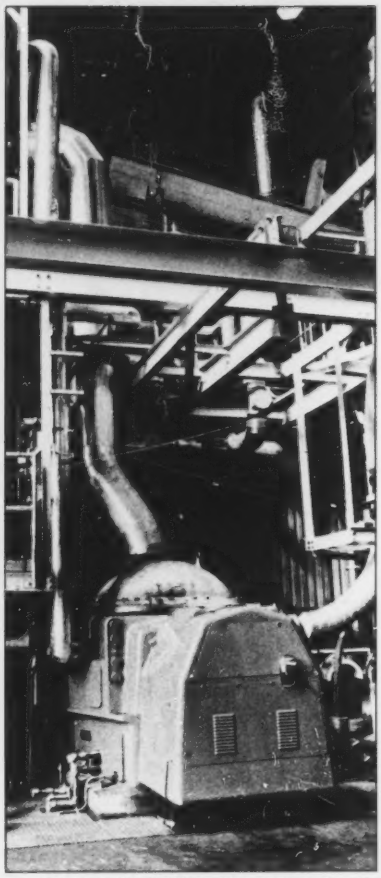

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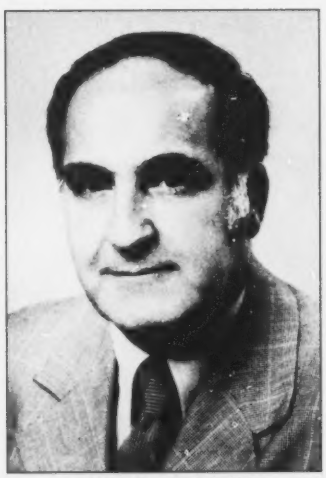

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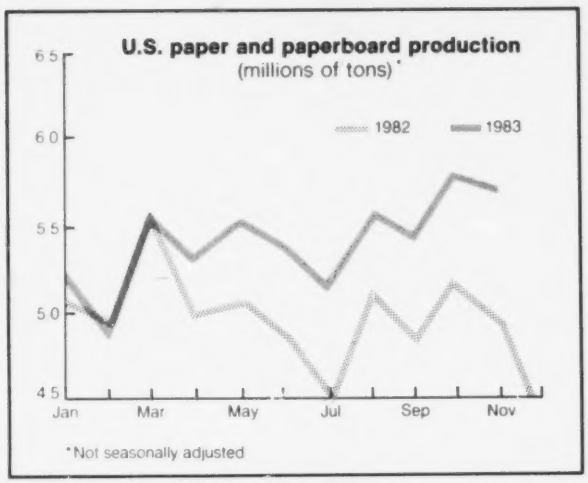
U.S. paper and paperboard production in November totaled 5.65 million tons, an increase of 11.7% compared to November 1982, according to American Paper Institute figures. Paper and board production continued very strong for the third month in a row, with the October-November two-month moving average of seasonally adjusted data hovering around the 68-million-tpy mark.

Among major grades, printing/writing papers and tissue showed the largest increases in November. API now estimates a 14% increase in 1983 coated paper shipments over 1982 and an 11% increase for uncoated free-sheet papers. Paperboard production remained strong in November in all the major grades. 1983 containerboard production was about 10% higher than in 1982, API estimates. Corrugated box shipments through November were up 9.7% from a year earlier, according to the Fibre Box Assn.

Canadian newsprint shipments in November totaled 766,000 metric tons, up 10.7% from 1982, according to Canadian Pulp & Paper Assn. figures. Newsprint mill operating rates stood at 95%, up from 80% in November 1982.



		Latest month (000 short tons)	% change from year ago	Annualized year-to-date (000 short tons)	% change from year ago
PAPER & PAPERBOARD PRODUCTION[1]					
Newsprint	November	453	10.2	5,142	2.3
Uncoated groundwood (s)	November	138	12.2	1,515	3.3
Coated paper (s)	November	540	25.3	5,710	12.9
Uncoated free sheet (s)	November	745	14.4	8,699	10.4
Unbleached kraft packaging and industrial (s)	November	330	0.9	3,809	2.5
Tissue	November	395	7.9	4,760	7.5
Total paper	**November**	**2,842**	**11.8**	**32,911**	**7.5**
Kraft linerboard, unbleached	November	1,331	9.1	15,154	10.5
Semichemical medium	November	423	14.0	4,747	7.2
Bleached paperboard	November	330	8.9	3,841	8.2
Recycled paperboard	November	645	18.9	7,274	10.9
Total paperboard	**November**	**2,805**	**11.7**	**32,198**	**9.2**
Total paper and paperboard*	**November**	**5,647**	**11.8**	**65,109**	**8.4**
PULP, WASTEPAPER & FIBER[2]					
Total woodpulp production	October	4,677	10.6	52,558	5.3
Market pulp production	October	590	27.1	6,453	11.2
Wastepaper consumption at paper/board mills	October	1,321	9.2	14,359	5.9
Pulpwood consumption (cords)	November	7,534	9.3	85,721	7.8
CONVERTED PRODUCTS STATISTICS[3]					
Corrugated box shipments (billion ft²)	November	21.043	9.7	232.940†	7.0
Containerboard inventories at box plants	Nov. 1	2,302	−5.0		
INTERNATIONAL TRADE[2]					
U.S. paper imports (including products)	October	835	12.8	8,829	9.8
Imports of Canadian newsprint	October	630	n.a.	6,767†	4.0
U.S. paper exports (including products)	October	347	−7.0	4,565	5.9
Exports of unbleached kraft linerboard	November	158	9.0	2,178	11.5
Exports of woodpulp	October	315	32.9	3609	5.1
CANADIAN STATISTICS[4] (reported in metric tons)					
Total newsprint shipments	November	766	10.7	7,718†	5.3
Operating rates	November	95%	80%	85%	83%
Inventories held by U.S. consumers	Nov. 30	1,211	−8.5		
Woodpulp shipments (export only)	November	522	3.6	6,079†	14.5
Operating rates	November	89%	70%	84%	78%

1. American Paper Institute. 2. API, Bureau of Census, American Pulpwood Assn. 3. Fiber Box Assn., Paperboard Packaging Council. 4. Canadian Pulp & Paper Assn.
*Includes construction and wet machine grades. †Not annualized. ‡Not directly comparable to year ago because of coding change. (s) = shipments.

Tissue: Strengthened demand, slow capacity growth: high operating rates

Statistics:	1982	1983	1984e
Production, 000 tons[1]	4,438	4,750	4,950
Capacity, 000 tons[1]	5,125	5,182	5,236
Utilization rate, %	86.6	91.7	94.5
Imports, 000 tons[2]	7	11	10
Exports, 000 tons[2]	23	16	18
Apparent U.S. consumption			
000 tons	4,422	4,745	4,942
lb/capita	38.3	40.7	42.0
000 tons/$billon real GNP	2.98	3.09	3.05

[1]API data [2]Commerce Dept. data e=estimate

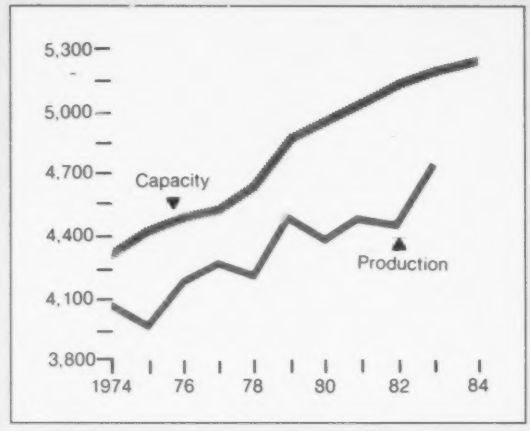
GRADE STRUCTURE: Tissue consists of two subgroupings: sanitary and "other." By far the largest group is sanitary, constituting about 97% of production. Major sanitary grades are facial tissue, bathroom tissue, toweling, napkins, and basestock for sanitary stock, wadding, and wipes. The "other" category includes basestock for waxing, wrapping, and miscellaneous tissue. Sanitary can also be divided into consumer (about 3 million tons in 1982) and commercial/industrial (about 1.4 million tons). Typical basis weights for single-ply bathroom tissue are 12 to 14 lb/3,000 ft² and for single-ply towel, 32 to 39 lb/3,000 ft².

PRODUCTION/CAPACITY: Tissue output tends to be directly related to economic activity and thus went on a roller coaster ride in the early 1980s. It dropped 2.9% in 1980 and bounced back up by 3.2% in 1981, only to fall 2.9% in 1982 and surge back up by 7.0% in 1983. Unit volume fell little if at all, however, as the market shifted to single-ply products and lower sheet-count and size. Smith Barney, Harris Upham & Co. analyst George Adler estimates case shipments overall rose by about 6% in 1982, while tonnage was off.

While production was uneven, capacity showed little growth, rising by only 5.7% between 1980 and 1984. Indeed, 25 old machines representing 278,000 tpy of capacity were shut down in the 1980-83 period. Only three new machines were scheduled for the 1984-86 period, representing an addition to industry capacity—including other improvements planned—of 363,000 tons, or a 2.3%/year growth rate.

Uneven demand levels led mills in the early 1980s to take advantage of temporarily reduced fiber costs to launch aggressive promotion (discount) drives, keeping pricing fairly stable during the period.

OUTLOOK: Output in 1983 benefited from the surge in the U.S. economy, which pushed tonnage production up an exhilerating 7%. As the recovery enters a more mature phase in 1984, growth should moderate, and tissue production is forecast to rise by just 4.2%. Still, with capacity going up only 1.0% between 1983 and 1984, operating rates should rise to a very healthy 94.5% this year. Price increases during the first quarter were considered likely. With operating rates remaining high all year long, pricing should enjoy its best year since the late 1970s. Fort Howard Paper Co. is considering two new machines in the next three years, however, in addition to a small 14,000-tpy expansion planned for 1984 by Tagsons Papers Inc., in Mechanicville, N.Y. If the U.S. economy slows down in 1985, production and hence operating rates could perform less impressively in 1985 and 1986.



Estimated capacities of major U.S. companies are:

	Annual capacity (000 tons)	Capacity share (%)
1. Scott Paper Co.	1,035	19.8
2. Procter & Gamble Co.	900	17.2
3. Fort Howard Paper Co.	565	10.8
4. James River Corp.	560	10.7
5. Georgia-Pacific Corp.	510	9.7
6. Kimberly-Clark Corp.	400	7.6
7. Crown Zellerbach Corp.	310	5.9
8. Potlatch Corp.	123	2.3
9. Marcal Paper Mills Inc.	115	2.2
10. APL Corp.	95	1.8
11. Wisconsin Paper Mills Inc.	91	1.7

U.S. annual capacity (1984): 5.236 million tons
Capacity share of top five companies: 68.2%
Capacity share of top ten companies: 88.1%

PRICING: Price performance trends according to the Bureau of Labor Statistics' producer price index have been as follows: (year-end; 1967=100): 1970, 115.1; 1972, 121.0; 1974, 155.7; 1975, 194.7; 1976, 214.7; 1977, 236.7; 1978, 253.3; 1979, 279.4; 1980, 343.4; 1981, 349.2; 1982, 362.6; Nov. 1983: 359.7.

MARKET: Breakdown of major tissue end uses is as follows: toilet, 38% (of which 54% is single-ply and 46% is multi-ply); towels, 31%; facial, 8%; napkins, 13%; wipes, 2%; other sanitary, 5%; nonsanitary, 3%. Nonsanitary tissue demand has fallen from 230,500 tons in 1972 to 148,400 tons in 1982.

News section continues on page 21

ENVIRONMENT

Administration woos 'average voter'

While Congress enjoyed its holiday vacation, the Administration was taking steps to defuse the potentially explosive environmental issue before it further damages the Republican Party's presidential prospects.

In replacing controversial officials like Anne Burford at the Environmental Protection Agency and Jim Watt at the Dept. of Interior, the White House has completed the first, and easiest, stage of its campaign to improve its environmental image. The second stage, now underway, is to agree upon concrete actions that will at least mollify heightened public concern over environmental protection.

The White House is reportedly struggling to resolve an internecine dispute over an acceptable acid rain policy in time for the Administration's testimony before the Senate Environment Committee on Feb. 2.

GOP strategists insist some sort of credible acid rain policy must be in place soon for President Reagan to run on during the primaries. Some White House aides, however, question whether the President can approve a position in time for the Senate hearings, noting he hasn't yet considered the complex issue at all.

OMB Director David Stockman and EPA chief William Ruckelshaus have considered it and arrived at different conclusions, with Stockman objecting that not enough is known to justify the costs of clean up and Ruckelshaus urging adoption of a moderate program now.

Meanwhile, at the Interior Dept., Secretary William Clark is presiding over a housecleaning. He reportedly will soon dismiss Watt's controversial departmental solicitor, William Coldiron, and has already asked for the resignations of Watt's chief aides responsible for coal and mineral leasing. So far, BIM Director Robert Burford has not been affected by the replacements.

Review of current programs. Former congressional liaison Stan Hulett, now working in San Francisco as Interior's western liaison, was replaced in January by Carole Hallett. Hallett is a former GOP leader of the California State Assembly and was state director of parks and recreation.

Clark told reporters the personnel moves signal neither a departure from nor a confirmation of Jim Watt's policies. The secretary has insisted that no broad policy decisions will be taken until the department completes a comprehensive review of current programs.

Clark showed a sensitivity to the public relations job he has before him in restoring Interior's credibility by replacing Watt's chief aide, undersecretary J.J. Simmons, with former EPA public affairs official Ann McLaughlin. Her first assignment: review relations with the news media.

Aiming at average voter. Environmentalists applauded the ouster of Coldiron but derided the shuffling of personnel as cosmetic. That isn't likely to bother the White House, which knows it can't please environmentalists anyway and isn't trying to. It merely wants to improve its reputation with the average voter.

That will require substantive action. Clark has already notified the OMB that he'll need an additional $100 million in fiscal 1985 to buy pockets of private land within the boundaries of national parks, and additional funds for park expansion.

Regulation of lagoons. Paper industry managers will note that EPA's draft policy reportedly urges study of more regulation of surface impoundments and treatment lagoons. The House last year passed legislation increasing regulation of treatment lagoons, but the Administration would like to minimize the regulatory burden.

EMPLOYMENT

Productivity gains consolidated

Higher production levels, workforce reductions, and other cost-cutting measures taken during the recession have given a big boost to productivity in the U.S. pulp and paper industry. Productivity per workhour at pulp, paper, and paperboard mills in September was running 10.2% higher than a year earlier, according to American Paper Institute figures.

Unit labor costs declined as increases in average wage rates lagged the rise in productivity, Bureau of Labor Statistics figures show. Production workers' wages at pulp and paper mills were up 5.5% in September from 1982, while workers in board mills were making 5.6% more.

Total employees at pulp, paper, and paperboard mills in September numbered 254,000, down 0.5% from September 1982 and down 0.2% from the number employed in June 1983. Preliminary BLS figures for October showed employment up slightly from September to 255,000 and up 1.0% from October 1982. Preliminary data for October also indicate further increases in overall paper industry employment, to 667,500 workers from 665,000 in September, as the economy continues to pick up.

Employment, hourly earnings, and productivity trends in the U.S. paper & allied products industry

	Sept. 1983	June 1983	Sept. 1982	% change Sept. 83/82
Total employees (000)				
Paper & allied	665.0	661.9	658.7	1.0%
Pulp, paper & board mills	254.0	254.5	255.3	−0.5
Converted products	411.0	407.4	404.2	1.7
Corrugated boxes	99.4	98.6	99.0	0.4
Average hourly earnings of production workers ($/hr)				
Paper & allied	$10.09	$ 9.91	$ 9.63	4.8
Pulp, paper mills	12.01	11.66	11.38	5.5
Paperboard mills	12.32	12.06	11.67	5.6
Corrugated box plants	9.03	8.97	8.76	3.1
Index of output per workhour pulp, paper, board mills*				
Production workers	125.7	117.8	114.8	9.5
All employees	124.7	116.4	113.2	10.2

*Annualized year-to-date (1960=100).
Source: Bureau of Labor Statistics, American Paper Institute.

Caution, study are keys for entering

Catalogs, heatset offset and forms look like good growth prospects for the future, but quality challenges may frustrate some new producers

By DAVID R. ALLAN, Associate Editor

■ Newsprint mills and others wanting to enter the uncoated groundwood paper business in North America or Europe will have to pick their market niche carefully if they want to earn an adequate profit. And the quality challenges of such production may be higher than many in the paper industry realize.

These were some of the conclusions of *Pulp & Paper's First Uncoated Groundwood Papers Conference*, recently held at the Waldorf-Astoria Hotel in New York, New York. About 250 papermakers, publishers, converters, merchants, equipment suppliers and others heard an array of speakers sound a note of caution about the sometimes optimistic public view of the uncoated groundwood market's future.

But several of the speakers also pointed out some exciting market opportunities for mills willing to make the investment to serve particular customer needs. Opportunities cited include the business forms and catalog markets and the heatset offset portion of the newspaper insert and preprint market.

OUTLOOK FOR MARKETS. Demand for uncoated groundwood papers stagnated during the recent back-to-back recessions, and the future for many important end uses—both in Europe and the U.S.—appears unexciting. Finnpap's Marjatta Malmipohja cited supercalendered (SC) uncoated groundwood offset paper as a growth area in Europe, however, with double-digit increases possible from the present 200,000-metric-tpy level.

A general trend toward offset—caused by growth in specialized magazines and directories—seems to be developing in Europe, but it won't always mean gains for uncoated groundwood. Some end users will decide instead to shift to coated paper in search of an adequate offset printing paper.

Most other European uncoated groundwood markets appear fairly stable, however, and capacity for virtually all end uses seems sure to equal or exceed demand for the foreseeable future.

North American mills should enjoy fairly healthy operating rates going into the mid-1980s, according to Jones Heward & Co. financial analyst Brian Topp. Canadian "supernews" mills should run at 91% next year and 94% in 1985, while their U.S. competitors may run at only 90% in 1984 but should be up to 94% the following year, he said. Topp projected an operating rate for each country of just 85% this year.

The reason why next year's rate is not expected to be higher is that North American mills will be recovering from depressed levels, but Topp expected North American newsprint and uncoated groundwood mills together will see a 6.7% demand jump next year and 5.8% the following year. He forecast a 7.2% jump for groundwood demand in 1984 and 5.4% in 1985.

Catalog paper. Lightweight catalog paper will gain a premium value in the next few years because the Postal Service will probably move to jack up mail rates for catalogs, Hanover House Industries executive vice president William Fitzgerald said. Some catalogs, including a few of Hanover House's own, have been moved down the basis weight scale already in recent years to get more pages per ounce of mailing weight. But further downgrading in weight would represent a major opportunity for uncoated groundwood mills that can offer a high-quality substitute for coated paper, Fitzgerald said.

Madison Paper Industries saw itself as a major competitor for that future growth in catalogs when it decided to add a 160,000-tpy SC machine at its Madison, Maine, mill.

TABLE 1: **North American groundwood specialties and newsprint operating rates.**

	1982	1983f	1984f	1985f
Canada	86%	85%	91%	94%
U.S.	83	85	90	94

Source: Brian Topp, Jones Heward & Co. f=forecast

TABLE 2: **Specifications for theoretical heatset offset paper compared with existing SC sheet.**

	Heatset	SC
Saturation level	5.3	5.8
Brightness	68-69	69.5
Surface smoothness	95	78
Basis weight	35 lb	35 lb
Price: Less than supercalendered		

Source: Treasure Chest Advertising suggestions.

the uncoated groundwood market

Rather than focusing primarily on the small (16 to 98-page), high-volume mail-order catalog such as those represented by Hanover House, Madison aimed its efforts at the large mail-order retailers such as Penney's, Sears and Wards, offering especially a 30-lb (3,300 ft² basis) sheet that was among the best uncoated catalog papers available in North America. And with its catalog customers as well as magazine, supplement, insert and commercial printing paper customers apparently liking the paper, the machine is now operating above its design capacity, Madison president Jack Chinn said.

Inserts. The insert market will grow at a compound annual rate of 8% over the next five years, Treasure Chest Advertising Inc. CEO Robert Milhous predicted. Thus it could approach 2.9 million short tpy before the end of the decade. And Milhous expected to see the offset portion to "grow at a faster rate as it continues to take market share away from the other print processes." Milhous thought it likely that "uncoated groundwoods would be the most likely beneficiary of any growth in the circular market." Especially helpful, he added, would be a grade of paper designed specifically for the heatset offset market, since he expected his current ratio of heatset to coldset printing to rise from 25% at present to over 60% in 1988.

Forms paper. Star Forms Inc. president Hunt Harris expected the total groundwood forms market to jump from 330,000 tons in 1982 to 610,000 tons in 1990—assuming mills can meet the forms industry's extremely tight quality needs—while the carbonless sector of the groundwood forms industry jumps from 130,000 tons to 245,000 tons.

Stock continuous forms will lead the industry in growth, rising at 7.5%/year between 1982 and 1986, Harris believes, while custom continuous will rise by a healthy annual rate of 6.3% and unit sets by a more mature 3.3%/year. Stock continuous will soak up the lion's share of groundwood forms paper by 1990, as they do currently, with 200,000 tons of stock continuous carbonless groundwood being produced and 350,000 tpy of other uncoated groundwood stock continuous forms.

Directories. St. Regis Corp.'s Ted Robinson estimated 1981 "directory paper" demand in North America at 644,000 tons, with 503,000 tons going into directories and the balance into catalogs. Demand from both end uses should hit 936,000 tons by 1990, he projected. Lightweight directory and catalog paper demand in the U.S. alone should rise at 2.5% to 3% over the next few years, Consolidated-Bathurst Inc.'s Ashok Narang said.

Recent paper conservation efforts by GTE Directories Corp. have put a ceiling on its 40,000-tpy consumption increases, but printing director Alan Duy noted those efforts are largely over and he expected his company's total printed page count to rise by 5% or more over the next five years. He did not think electronic directories are much of a threat during that time frame and did not expect to see any big move toward directory inserts printed on other grades of paper, four-color advertising, or use of coupons in phone books.

Rotonews. Robinson saw rotonews demand in the U.S. growing from 764,000 short tons in 1981 to just over 1.0 million tons in 1990, with the newspaper insert portion of it jumping from 260,000 tons to 411,000 tons. But roto now supplies only 27% of all insert paper and letterpress 8%, as estimated by Treasure Chest's Milhous, and will continue to lose share to offset paper.

Supercalendered. Supercalendered paper was consumed in 1981 to the tune of 299,000 tons in the U.S., according to Robinson, with this likely to grow to 521,000 tons by 1990. Madison's Chinn, talking about 1980, saw a bigger market of 375,000 tpy, with about half of that coming from Scandinavia and western Europe.

The European market for SC paper is much larger than the U.S. market, Finnpap's Malmipohja said. She estimated total SC demand in western Europe at 1.8 million metric tons out of the total 3.1-million-tpy European groundwood specialties consumption. Most of that SC demand is from gravure printers, who make up the bulk

TABLE 3: **Estimated paper tonnage shipments to the business forms industry, 1990 (000 tons).**

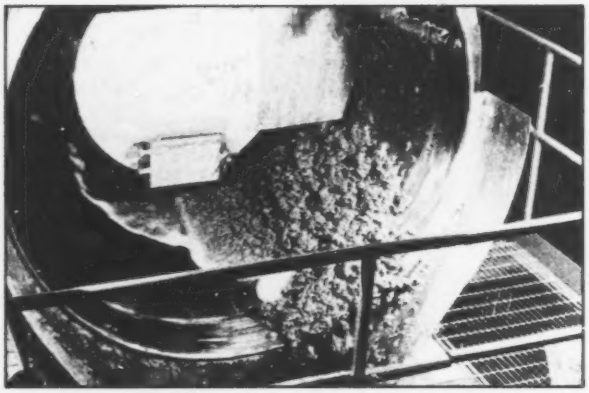
	Custom continuous	Stock continuous	Sets and other	Total
Forms bond	775	1,335	130	2,240
Carbonless free sheet	175	0	540	715
Carbonless groundwood	25	200	20	245
Other uncoated groundwood	0	350	15	365
Other	85	0	85	170
Total	1,060	1,885	790	3,735

Source: Hunt Harris, Star Forms Inc.

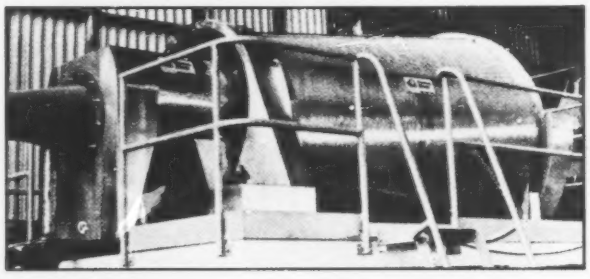
For screening in these applications...

- Fiber recovery
- Pulp washing and thickening
- Barking drum and mill year effluent
- Removal of plastic from usable fiber
- Black liquor—fiber separation
- Chip dewatering
- Whitewater

Consider internal feed wedge wire screens from Contra-Shear.



Contra-Shear screen's exclusive headbox design directs the total influent flow in the opposite direction of the rotating wedge wire openings. The result is maximum fiber capture with high discharge solids consistency and minimum stapling of screen/face.



Screen features

- No vibrating parts means reliable, long service.
- No wearing parts such as drum seals, doctor blades or brushes.
- 304 stainless steel screen and wetted metal components virtually eliminate corrosion.
- Screen models available to handle from 50-10,000 GPM.

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of the big SC magazine industry in Europe, but the growth appears to be in the small 200,000 tpy SC offset, thanks to the flexibility requirements of time-sensitive publications such as *TV Times* or regional editions of publications such as the *Observer*.

UPGRADING CAPACITY. Large volumes of newsprint capacity have become uncompetitive, and some observers think a significant move of that capacity to uncoated groundwood is possible in the next few years.

Topp predicted operating profits during the peak of the currently beginning market recovery will lag operating profits in the last cyclical peak by nearly 15%, however, restraining overall capacity expansion in groundwood. He did, nevertheless, point to three MacMillan Bloedel machines—No. 9 at Powell River, B.C., and two units at the Port Alberni, B.C., mill—as possible candidates for conversion. As Great Northern Paper's Howard Willets pointed out, however, such upgrades are expensive and time-consuming projects for any company and require a serious study of market niches before being entered into with any expectation of adequate payback.

Competitive groundwood products may also be harder for new entrants to make than many realize. Abitibi-Price Inc.'s T.R. Hall cited a long list of difficult quality challenges to be met for each groundwood product.

Even employee retraining can be a difficult and time-consuming job. Hall estimated that when Abitibi converted its Beaupre, Que., mill from newsprint to groundwood specialties, it spent almost $1 million on training everybody from woodlands personnel to quality control people in the needs and problems of offset, rotogravure and letterpress printers.

And one of the fastest growing groundwood end uses—the forms market—also has some of the most difficult quality requirements, as Star Forms' Harris noted. A few firms—he specified Abitibi and Consolidated-Bathurst by name—"have invested in the cleaning and refining capacity to produce a very acceptable groundwood forms bond," Harris said. But, he added, "some other suppliers are less clean and offer a product that resembles newsprint more than the forms bond that we are used to converting."

Among the quality problems faced by converters using groundwood paper are a dirty paper surface—especially troubling for converters using flying splicers—along with questions about a sheet's ability to punch cleanly, refold properly and show a consistent caliper and basis weight.

Some mills may think that all they have to do to serve the forms, directory or catalog market is get down to a lighter basis weight. But Jaakko Pöyry International Oy's Magnus Diesen pointed out that when a mill wants to reduce basis weight of its product, a paper machine with an open draw—typical of many smaller, older Canadian newsprint machines—may be at a disadvantage when it comes to paper machine runability.

Other questions to consider in deciding whether a given machine or mill can be converted to groundwood specialties, Diesen noted, include the quality of the woodfiber, arrangement of the woodyard to allow for adequate presorting of wood, availability of a low-freeness mechanical pulp, and layout of a mill to permit installation of two or three supercalenders. Old newsprint machines may also not be up to the required winding standards of SC paper, Diesen added. ■